

CLAIMS

WHAT IS CLAIMED IS:

1 1. A system for correcting wide-angle image data, said system
2 comprising:

3 a first input buffer configured to store wide-angle image data;
4 an image data processor operably coupled to said first input buffer
5 and configured to transform wide angle image data stored in the first input
6 buffer into corrected image data;

7 an encoder operably coupled to said image data processor and
8 configured to receive and encode the corrected image data in a format
9 suitable for at least one of display and recording of corrected images; and

10 wherein said corrected image data is not stored in a buffer from the
11 time of transformation by the image data processor until the time said
12 undistorted image data is received by the encoder.

1 2. A system according to claim 1, wherein:

2 said encoder is further configured to output signals for producing
3 corrected images comprising a plurality of pixels; and

4 said image data processor is configured to transform wide angle
5 image data stored in said first input buffer into corrected image data by
6 determining, for each of said plurality of pixels, wide angle image data
7 that corresponds to each of said plurality of pixels, and providing said
8 wide angle image data to said encoder.

1 3. A system according to claim 1, further comprising:

2 a look-up table memory operably coupled to the image data
3 processor, said look-up table memory being configured to store
4 transformation calculation data to be used by the image data processor to
5 transform wide angle image data stored in the first input buffer into
6 corrected image data.

1 4. A system according to claim 1, further comprising:
2 a user input module operably coupled to the image data processor
3 and configured to provide user command data to the image data processor.

1 5. A system according to claim 4, wherein:
2 said user input module is further configured to calculate a value
3 based on user input, and to communicate said calculated value to the
4 image data processor; and
5 said image data processor is further configured to use said
6 calculated value to transform wide angle image data stored in the first
7 input buffer into corrected image data.

1 6. A system according to claim 1 wherein said image data processor
2 comprises a processing device selected from the group consisting
3 essentially of a field programmable gate array and an application specific
4 integrated circuit.

1 7. A system according to claim 1, further comprising a source of
2 wide-angle image data operably coupled to said first input buffer.

1 8. A system according to claim 1, further comprising a second input
2 buffer configured to store image data different from the wide-angle image

3 data stored in said first input buffer, said second input buffer being
4 operably connected to said image data processor.

1 9. A system according to claim 8, said system further comprising a
2 first source of wide-angle image data operably coupled to said first input
3 buffer, and a second source of normal field of view image data operably
4 coupled to said second input buffer.

1 10. A system according to claim 7, wherein said source of wide-angle
2 image data comprises a video camera.

1 11. A system according to claim 10 wherein the video camera
2 produces video signals in a standard format selected from the group
3 consisting essentially of PAL, SECAM and NTSC.

1 12. A system according to claim 1, further comprising a monitor
2 operably coupled to said encoder for displaying corrected images.

1 13. A system according to claim 1, wherein the wide-angle image data
2 includes distortion and said image data processor transforms the wide-
3 angle image data in the first input buffer into corrected image data that is
4 substantially undistorted.

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2 14. A method for displaying and/or recording corrected image data
3 from wide-angle image data, said method comprising steps of:
4 buffering wide-angle image data;
5 transforming the buffered wide-angle image data into corrected
6 image data; and

7 encoding the corrected image data into one or more output signals,
8 without buffering the corrected image data; and
9 displaying and/or recording the output signals from the encoder.

1 15. A method according to claim 14, wherein the output signals
2 correspond to a corrected image comprising a plurality of pixels and said
3 step of transforming further includes determining, for each of said
4 plurality of pixels, wide angle image data that corresponds to each of said
5 plurality of pixels, and providing the wide angle image data for encoding.

1 16. A method according to claim 14, further comprising steps of:
2 storing transformation calculation data in a look-up table; and
3 using transformation calculation data stored in the look-up table to
4 transform the buffered wide angle image data stored into corrected image
5 data.

1 17. A method according to claim 14, further comprising steps of:
2 providing user command data to the image data processor; and
3 using the user command data to transform the buffered wide angle
4 image into corrected image data.

1 18. A method according to claim 17, further comprising steps of:
2 calculate a value based on user command data; and
3 using said calculated value to transform the buffered wide angle
4 image data into corrected image data.

1 19. A method according to claim 14 wherein the step of transforming
2 the buffered wide-angle image data into corrected image data corrects

3 distortion in the wide-angle image data such that the output signals are
4 representative of a substantially undistorted image.

1 20. A method according to claim 14, further comprising the step of
2 buffering normal field of view input image data and making said normal
3 field of view input image data accessible to the image data processor.

1 21. A system for correcting wide-angle image data, said system
2 comprising:
3 means for storing wide-angle image data;
4 means for transforming wide angle image data stored in said
5 storage means into corrected image data, said image transformation means
6 being operably coupled to said storage means; and
7 means for encoding the corrected image data into a format suitable
8 for at least one of display and recording of corrected images without
9 storing the corrected image data in a buffer from the time of
10 transformation by the image transformation means until the time the
11 corrected image data is received by the encoder means, said encoder
12 means being operably coupled to said image transformation means.